



## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2021-0137; Project Identifier MCAI-2020-00269-E]**

**RIN 2120-AA64**

#### **Airworthiness Directives; Safran Helicopter Engines, S.A. (Type Certificate Previously Held by Turbomeca, S.A.) Turboshift Engines**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Notice of proposed rulemaking (NPRM).

**SUMMARY:** The FAA proposes to supersede Airworthiness Directive (AD) 2014-04-06, which applies to all Safran Helicopter Engines, S.A. (Safran Helicopter Engines) Arrius 2B1, 2B1A, 2B2, and 2K1 model turboshift engines. AD 2014-04-06 requires initial and repetitive inspections of the hydro-mechanical metering unit (HMU) high pressure pump drive gear shaft splines, cleaning and inspections of the sleeve assembly splines, and replacement of the sleeve assembly on the affected high pressure pump drive gear shaft or replacement of the HMU if the HMU fails inspection. Since the FAA issued AD 2014-04-06, the manufacturer has published new service information that revises the inspections for certain HMUs and reduces compliance times for initial inspections. This proposed AD would require revised inspections and continue to require cleaning of the sleeve assembly splines, and replacement of the sleeve assembly on the affected high pressure pump drive gear shaft or replacement of the HMU if the HMU fails an inspection. The FAA is proposing this AD to address the unsafe condition on these products.

**DATES:** The FAA must receive comments on this proposed AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to <https://www.regulations.gov>. Follow the instructions for submitting comments.

- Fax: (202) 493-2251.
- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12 140, 1200 New Jersey Avenue SE, Washington, DC 20590.
- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this NPRM, contact Safran Helicopter Engines, S.A., Avenue du 1er Mai, Tarnos, France; phone: +33 (0) 5 59 74 45 11. You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (781) 238-7759.

### **Examining the AD Docket**

You may examine the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2021-0137; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this NPRM, the mandatory continuing airworthiness information (MCAI), any comments received, and other information. The street address for Docket Operations is listed above.

**FOR FURTHER INFORMATION CONTACT:** Wego Wang, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7134; fax: (781) 238-7199; email: [wego.wang@faa.gov](mailto:wego.wang@faa.gov).

### **SUPPLEMENTARY INFORMATION:**

#### **Comments Invited**

The FAA invites you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under ADDRESSES. Include “Docket No. FAA-2021-0137; Project Identifier MCAI-2020-00269-E” at the beginning of your comments. The most helpful comments reference a specific portion of the proposal, explain the reason for any recommended change, and include supporting data.

The FAA will consider all comments received by the closing date and may amend the proposal because of those comments.

Except for Confidential Business Information (CBI) as described in the following paragraph, and other information as described in 14 CFR 11.35, the FAA will post all comments received, without change, to <https://www.regulations.gov>, including any personal information you provide. The agency will also post a report summarizing each substantive verbal contact received about this NPRM.

### **Confidential Business Information**

CBI is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to this NPRM contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this NPRM, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as "PROPIN." The FAA will treat such marked submissions as confidential under the FOIA, and they will not be placed in the public docket of this NPRM. Submissions containing CBI should be sent to Wego Wang, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803. Any commentary that the FAA receives which is not specifically designated as CBI will be placed in the public docket for this rulemaking.

### **Background**

The FAA issued AD 2014-04-06, Amendment 39-17764 (79 FR 9990, February 24, 2014), (AD 2014-04-06), for all Turbomeca S.A. Arrius 2B1, 2B1A, 2B2, and 2K1 model turboshaft engines. AD 2014-04-06 was prompted by in-flight shutdowns caused by interrupted fuel supply at the HMU. AD 2014-04-06 requires initial and repetitive inspections of the HMU high pressure pump drive gear shaft splines, cleaning and inspections of the sleeve assembly splines, and replacement of the sleeve assembly on the affected high pressure pump drive gear shaft or replacement of the HMU if the HMU

fails inspection. The agency issued AD 2014-04-06 to prevent in-flight shutdown and damage to the engine.

#### **Actions Since AD 2014-04-06 Was Issued**

Since the FAA issued AD 2014-04-06, the manufacturer has published new service information that revises the inspections for certain HMUs, reduces compliance times for initial inspections, and allows application of non-cumulative tolerance of 10% of operating hours to be applied to the timing of the repetitive inspection of HMUs installed on certain engines.

The European Union Aviation Safety Agency (EASA), which is the Technical Agent for the Member States of the European Community, has issued EASA AD 2020-0033, dated February 25, 2020 (referred to after this as “the MCAI”), to address the unsafe condition on these products. The MCAI states:

A number of in-flight shutdown (IFSD) occurrences have been reported for ARRIUS 2 engines. The results of the technical investigations concluded that these events were caused by deterioration of the splines on the high pressure (HP) / low pressure (LP) pump assembly drive shaft of the HMU, which eventually interrupted the fuel supply to the engine.

This condition, if not detected and corrected, could lead to further cases of engine IFSD, possibly resulting in forced landing with consequent damage to the helicopter and injury to occupants.

To address these occurrences, Turbomeca published MSB 319 73 2825 (up to version G) to provide instructions for inspection of the HMU and sleeve assembly. Consequently, EASA issued AD 2013-0082 to require repetitive inspections of the drive gear shaft splines of the HP pump, and, depending on findings, accomplishment of applicable corrective action(s).

Since that [EASA] AD was issued, SAFRAN published the MSB to provide specific inspection instructions for HMU installed on a helicopter after 31 January 2013, to reduce the compliance time for

the initial inspection of Group 1 engines that were not previously inspected in accordance with version G or later of the MSB, and to provide some operational margin before the first inspection in all possible scenarios.

For the reason described above, this [EASA] AD retains the requirements of AD 2013-0082, which is superseded, and requires accomplishment of the actions in accordance with the instructions of the MSB, as defined in this [EASA] AD.

You may obtain further information by examining the MCAI in the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2021-0137.

#### **FAA's Determination**

This product has been approved by EASA and is approved for operation in the United States. Pursuant to the FAA's bilateral agreement with the European Community, EASA has notified the agency of the unsafe condition described in the MCAI and service information. The FAA is issuing this NPRM because the agency evaluated all the relevant information provided by EASA and determined the unsafe condition described previously is likely to exist or develop in other products of the same type design.

#### **Related Service Information under 1 CFR Part 51**

The FAA reviewed Safran Helicopter Engines Mandatory Service Bulletin (MSB) No. 319 73 2825, Version J, dated March 15, 2019. The MSB describes procedures for inspecting the HMU high pressure pump drive gear shaft splines and cleaning and inspecting the sleeve assembly splines. This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in ADDRESSES.

#### **Proposed AD Requirements in this NPRM**

This proposed AD would retain certain requirements of AD 2014-04-06. This proposed AD would require initial and repetitive inspections of the HMU high pressure pump drive gear shaft splines. This proposed AD would require cleaning of the sleeve assembly splines. This proposed AD would also require replacing the HMU or the sleeve

assembly on the affected high pressure pump drive gear shaft if the HMU fails inspection.

#### **Differences Between this Proposed AD and the Service Information or the MCAI**

EASA AD 2020-0033 identifies applicable engines as Safran Helicopter Engines Arrius 2B1, 2B1A, 2B2, 2G1, 2K1 and 2K2 model turboshaft engines, all serial numbers. This AD does not include Safran Helicopter Engines Arrius 2G1 and 2K2 model turboshaft engines in its applicability since these engines are not type certificated in the United States.

#### **Costs of Compliance**

The FAA estimates that this AD, if adopted as proposed, would affect 194 engines installed on helicopters of U.S. registry.

The FAA estimates the following costs to comply with this proposed AD:

##### **Estimated costs**

<b>Action</b>	<b>Labor Cost</b>	<b>Parts Cost</b>	<b>Cost per product</b>	<b>Cost on U.S. operators</b>
Visual inspection of drive gear shaft splines; cleaning and inspection of sleeve assembly splines	2 work-hours x \$85 per hour = \$170	\$900	\$1,070	\$207,580

The FAA estimates the following costs to do any necessary replacements that would be required based on the results of the proposed inspection. The agency has no way of determining the number of aircraft that might need these replacements.

##### **On-condition costs**

<b>Action</b>	<b>Labor Cost</b>	<b>Parts Cost</b>	<b>Cost per product</b>
Replace sleeve assembly on high-pressure pump drive gear shaft	1 work-hour x \$85 per hour = \$85	\$898	\$983

Replace HMU	1 work-hour x \$85 per hour = \$85	\$45,000	\$45,085
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### **Authority for This Rulemaking**

Title 49 of the United States Code specifies the FAA’s authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency’s authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: General requirements. Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

### **Regulatory Findings**

The FAA determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify this proposed regulation:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Would not affect intrastate aviation in Alaska, and
- (3) Would not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

### **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

### **The Proposed Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

## **PART 39 - AIRWORTHINESS DIRECTIVES**

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

### **§ 39.13 [Amended]**

2. The FAA amends § 39.13 by:

a. Removing Airworthiness Directive 2014-04-06, Amendment 39-17764 (79 FR 9990, February 24, 2014), and

b. Adding the following new airworthiness directive:

**Safran Helicopter Engines, S.A (Type Certificate previously held by Turbomeca, S.A.):** Docket No. FAA-2021-0137; Project Identifier MCAI-2020-00269-E.

#### **(a) Comments Due Date**

The FAA must receive comments on this airworthiness directive (AD) action by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

#### **(b) Affected ADs**

This AD replaces AD 2014-04-06, Amendment 39-17764 (79 FR 9990, February 24, 2014).

#### **(c) Applicability**

This AD applies to Safran Helicopter Engines, S.A. (Type Certificate previously held by Turbomeca, S.A.) Arrius 2B1, 2B1A, 2B2, and 2K1 model turboshaft engines.

#### **(d) Subject**

Joint Aircraft System Component (JASC) Code 7320 – Fuel Controlling System.

#### **(e) Unsafe Condition**

This AD was prompted by in-flight shutdowns caused by interrupted fuel supply at the hydro-mechanical metering unit (HMU). The FAA is issuing this AD to prevent interrupted fuel supply at the HMU. The unsafe condition, if not addressed, could result in engine in-flight shutdown, forced landing of the helicopter, damage to the helicopter and injury to occupants.

#### **(f) Compliance**

Comply with this AD within the compliance times specified, unless already done.



### **(g) Required Actions**

(1) Within the compliance time specified in Table 1 to paragraph (g)(1) of this AD, as applicable, and before re-installation of the HMU after each removal from the engine, visually inspect the drive gear shaft splines of the high pressure pump, and clean and inspect the sleeve assembly splines in accordance with paragraphs 2.4.2 and 2.4.3, or 4.4.2 and 4.4.3, as applicable, of Safran Helicopter Engines Mandatory Service Bulletin (MSB) 319 73 2825, Version J, dated March 15, 2019.

**Table 1 to Paragraph (g)(1)**

<b>HMU Group / Condition</b>	<b>Compliance Time</b>
Group 1 / 150 HMU operating hours or more accumulated since new or since last overhaul.	Within 50 HMU operating hours after the effective date of this AD.
Group 1 / Less than 150 HMU operating hours accumulated since new or since last overhaul.	Before exceeding 200 HMU operating hours after the effective date of this AD.
Group 2	Within 500 HMU operating hours since the last inspection or since first installation of the HMU.

(2) Repeat the inspection required by paragraph (g)(1) of this AD at intervals not to exceed 500 HMU operating hours since the previous inspection.

Note 1 to paragraph (g)(2): A non-cumulative tolerance of 10% of HMU operating hours (hrs) may be applied to the timing of each repetitive inspection, with a maximum allowable tolerance of +50 HMU operating hrs. For example, counting from the initial inspection, the repeat inspections would occur at the following times, with the tolerance noted in parentheses; 500 HMU operating hrs (+50 hrs), 1000 HMU operating hrs (+50 hrs), 1500 HMU operating hrs (+50 hrs).

(3) If a rejectable indication is found during any inspection required by paragraphs (g)(1) or (2) of this AD, replace the sleeve assembly on the affected high-pressure pump drive gear shaft or replace the affected HMU in accordance with paragraph 2.4.2 or 4.4.2 of the MSB.

### **(h) Definitions**

(1) A Group 1 HMU is an HMU that was first installed on or before January 31,

2013, and that has not previously been inspected in accordance with Safran Helicopter Engines MSB 319 73 2825 version G or later.

(2) A Group 2 HMU is an HMU that was first installed after January 31, 2013, or a HMU that has previously been inspected in accordance with Safran Helicopter Engines MSB 319 73 2825 version G or later.

**(i) No Reporting Requirement**

The reporting requirements specified in the Accomplishment Instructions, paragraph 2.4.2, of the MSB are not required by this AD.

**(j) Credit for Previous Actions**

You may take credit for any initial inspection or replacement of an HMU or the sleeve assembly on the affected high-pressure pump drive gear shaft required by paragraph (g) of this AD if you performed the inspection or replacement in accordance with Safran Helicopter Engines MSB 319 73 2825, version G, dated January 24, 2013; version H, dated September 1, 2014; or version I, dated April 26, 2016.

**(k) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, ECO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the ECO Branch, send it to the attention of the person identified in Related Information. Information may be emailed to: ANE-AD-AMOC@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

**(l) Related Information**

(1) For more information about this AD, contact Wego Wang, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7134; fax: (781) 238-7199; email: wego.wang@faa.gov.

(2) Refer to European Union Aviation Safety Agency (EASA) AD 2020-0033, dated February 25, 2020, for more information. You may examine the EASA AD in the

AD docket at <http://www.regulations.gov> by searching for and locating it in Docket No. FAA-2021-0137.

(3) For service information identified in this AD, contact Safran Helicopter Engines, S.A., Avenue du 1er Mai, Tarnos, France; phone: +33 (0) 5 59 74 40 00. You may view this referenced service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (781) 238-7759.

Issued on March 5, 2021.

Lance T. Gant, Director,  
Compliance & Airworthiness Division,  
Aircraft Certification Service.

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